DOCUMENT RESUME

ED 319 511 PS 018 795

AUTHOR Feagans, Lynne V.; And Others
TITLE Attention to Language in Day Care Attending Children: A Mediating Factor in the Developmental Effects of Otitis Media.
SPONS AGENCY Health Resources and Services Administration (DHHS/PHS), Rockville, MD. Bureau of Maternal and Child Health and Resources Development.
PUB DATE Apr 90
GRANT MCJ-420565
NOTE 15p.; Poster presented at the International Conference on Infant Studies (7th, Montreal, Quebec, Canada, April 19-22, 1990).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Attention; Day Care; *Diseases; Early Childhood Education; *Hearing Impairments; Individual Development; *Infants; *Language Acquisition; Oral Reading
IDENTIFIERS *Distractibility; *Otitis Media

ABSTRACT

Three ways in which otitis media may affect development of hearing are explored. First, developmental effects may be due to illness in general; second, otitis media may cause fluctuating hearing loss which may lead to deficits in language in many areas; and, third, fluctuating hearing loss may have only a temporary effect on the acquisition of language and other processes, and recovery may be rapid when hearing returns to normal. Each of the 50 children in the sample was seen each week by a nurse who screened the children for signs of illness. Otitis media was diagnosed through a combination of pneumatic otoscopy and immittance audiometry. All children with signs of illness were then assessed by a physician. In an effort to examine the relationship between otitis media and attention, children were given a book-reading session when they were well, ill, and had otitis media. In addition, parents and day care teachers rated children's distractibility. The findings, which were based only on children between 12 and 18 months of age, revealed that even when well, children with high otitis media did not attend to language as much as children with lower levels of otitis media. These results suggest early effects of the disease. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED319511

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ATTENTION TO LANGUAGE IN DAY CARE ATTENDING CHILDREN: A MEDIATING FACTOR IN THE DEVELOPMENTAL EFFECTS OF OTITIS MEDIA

Lynne V. Feagans, Ph.D.

Stephanie McGhee

Elizabeth Kipp

and

Ingrid Blood, Ph.D.

The Pennsylvania State University

College of Health and Human Development

University Park, PA 16802

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Lynne V. Feagans

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS 018795

Poster presented at the International Conference on Infant Studies, Montreal, Canada, April, 1990. This research was supported by grant MCJ-420565 from the Maternal and Child Health Program (Title V, Social Security Act), Health Resources and Services Administration, Department of Health and Human Services to Lynne Feagans and Ingrid Blood, Principal Investigators. We would like to thank W. Todd Bartko for data management and statistical assistance.

BEST COPY AVAILABLE

HYPOTHESES

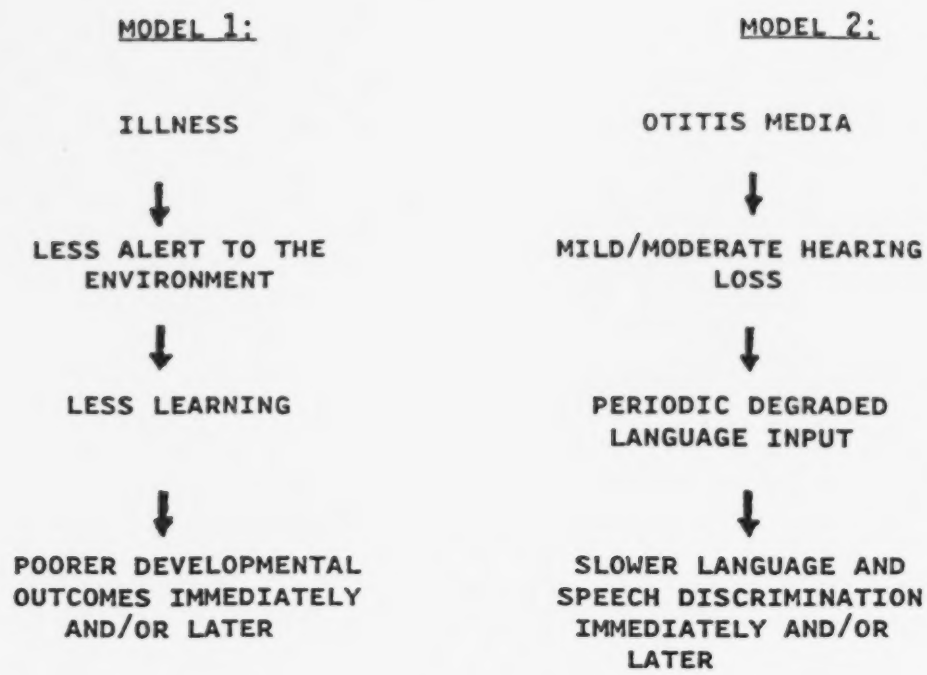
THERE ARE A VARIETY OF WAYS IN WHICH OTITIS MEDIA MIGHT HAVE AN EFFECT ON CONCURRENT AND LATER DEVELOPMENT. THERE ARE THREE MAJOR ONES THAT ARE BEING EXPLORED IN THIS STUDY. FIGURE 1 SHOWS A SCHEMATIC DIAGRAM OF MODELS BEING TESTED. DATA TO TEST MODEL 3 WILL BE PRESENTED IN THIS POSTER.

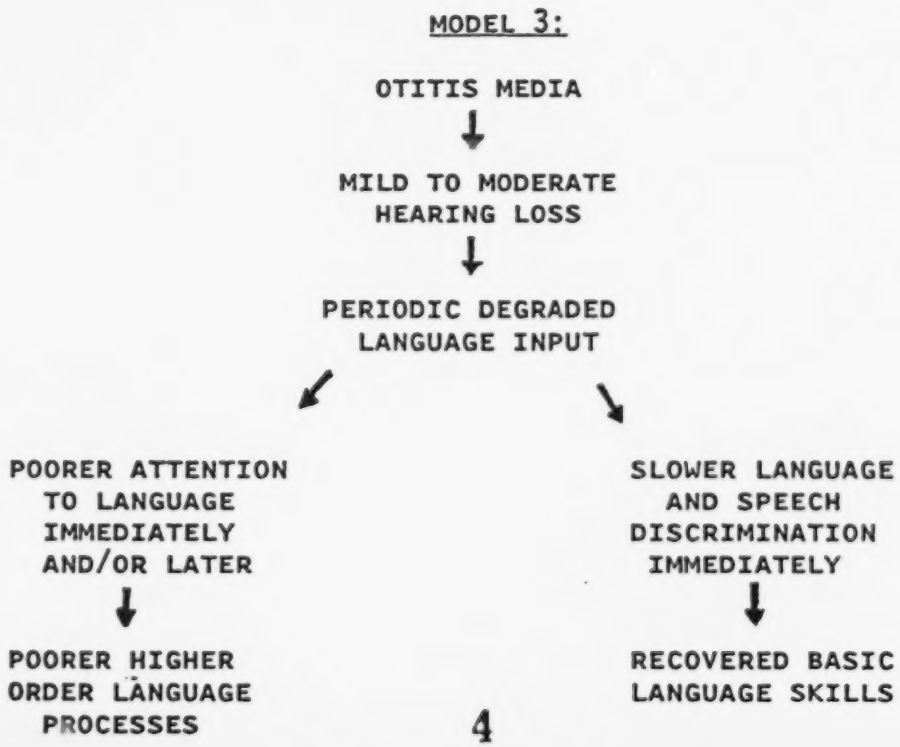
FIRST, IT IS POSSIBLE THE DEVELOPMENTAL EFFECTS FOUND IN BOTH RETROSPECTIVE AND PROSPECTIVE STUDIES ARE NOT DUE TO EARLY OTITIS MEDIA BUT TO ILLNESS IN GENERAL. ALTHOUGH THIS IS NOT THE MOST PLAUSIBLE EXPLANATION, THERE ARE NO STUDIES OF OTITIS MEDIA WHICH CONCURRENTLY ARE TRACKING ILLNESS IN CHILDREN. GENERAL ILLNESS MAY INFLUENCE THE WAY CHILDREN PROCESS INFORMATION GENERALLY AND IN TURN AFFECT A VARIETY OF DEVELOPMENTAL PROCESSES (SEE MODEL 1).

SECOND, IT IS POSSIBLE, AS MENYUK (1980) HAS DISCUSSED, THAT OTITIS MEDIA CAUSES FLUCTUATING HEARING LOSS. THIS CHANGING BASE ON WHICH TO BASE DEDUCTIONS ABOUT THE RULES OF THE LANGUAGE MAY LEAD TO DEFICITS IN LANGUAGE IN MANY AREAS. IN THIS WAY WE SHOULD SEE A RATHER DIRECT EFFECT OF THE FLUCTUATING HEARING LOSS ON AT LEAST SHORT TERM AND MAYBE LONG TERM DEVELOPMENTAL LANGUAGE PROCESSES (SEE MODEL 2).

THIRD, IT IS POSSIBLE THAT THE FLUCTUATING HEARING LOSS HAS ONLY A TEMPORARY EFFECT ON THE ACQUISITION OF LANGUAGE AND OTHER PROCESSES, AND RECOVERY MAY BE RAPID WHEN HEARING RETURNS TO NORMAL. YET, BECAUSE OF THE INCONSISTENCY OF THE INPUT, CHILDREN MAY LEARN TO BE INATTENTIVE TO LANGUAGE INPUT IN COMPARISON TO NORMALLY HEARING CHILDREN. THIS ATTENTION PROBLEM MAY BE THE MEDIATING VARIABLE THAT LEADS TO POORER DEVELOPMENTAL OUTCOMES IN A VARIETY OF AREAS. THIS IS HYPOTHESIZED TO BE THE MOST PLAUSIBLE MODEL AND ONE THAT IS CONSISTENT WITH A PRELIMINARY STUDY ALREADY REPORTED (FEAGANS, ET AL., 1986, 1988) (SEE MODEL 3).

FIGURE 1
MODELS TO BE TESTED




MODEL 3:
OTITIS MEDIA
MILD TO MODERATE HEARING LOSS
PERIODIC DEGRADED LANGUAGE INPUT
POORER ATTENTION TO LANGUAGE IMMEDIATELY AND/OR LATER
POORER HIGHER ORDER LANGUAGE PROCESSES
SLOWER LANGUAGE AND SPEECH DISCRIMINATION IMMEDIATELY
RECOVERED BASIC LANGUAGE SKILLS

SUBJECTS

CHILDREN IN THIS STUDY COME FROM THREE DAY CARE CENTERS IN CENTRAL PENNSYLVANIA. THEY INCLUDE A FOR-PROFIT DAYCARE INSTITUTED FOR AND LOCATED IN A HOSPITAL, A UNIVERSITY RUN NON-PROFIT DAYCARE LOCATED AT THE PENNSYLVANIA STATE UNIVERSITY, AND A FOR-PROFIT DAYCARE LOCATED IN ITS OWN BUILDING. THE FAMILIES WHO USE THESE DAYCARES ARE REPRESENTATIVE OF DUAL EARNER FAMILIES IN PENNSYLVANIA. ALL MOTHERS AND FATHERS ARE EMPLOYED FULL-TIME OUTSIDE THE HOME. THE CHARACTERISTICS OF THE FAMILIES ARE LISTED BELOW IN TABLE 1. PRESENTLY, THERE ARE 50 CHILDREN IN THE STUDY. THE AVERAGE AGE OF ENTRY INTO INFANT DAYCARE IS 4 MONTHS OF AGE.

DEMOGRAPHIC INFORMATION

OCCUPATION

FATHERS

PROFESSIONAL/SEMI-PROFESSIONAL	38%
SKILLED/SEMI-SKILLED	56%
UNSKILLED	6%

MOTHERS

PROFESSIONAL/SEMI-PROFESSIONAL	47%
SKILLED/SEMI-SKILLED	41%
UNSKILLED/OTHER	12%

FAMILY INCOME

MEAN - $44,800 RANGE - $30,000 - $66,000

AGE OF PARENTS

AVERAGE AGE OF FATHERS	34 YEARS
AVERAGE AGE OF MOTHERS	31 YEARS

FAMILY SIZE

ONE CHILD	65%
TWO CHILDREN	23%
MORE THAN TWO CHILDREN	12%

INSTRUMENTS USED

HEALTH SCREENING: EACH CHILD IN THE SAMPLE IS SEEN EACH WEEK BY A NURSE WHO SCREENS ALL CHILDREN FOR SIGNS OF ANY ILLNESS, INCLUDING COLDS, FEVER, AND OTITIS MEDIA. OTITIS MEDIA IS DIAGNOSED THROUGH A COMBINATION OF PNEUMATIC OTOSCOPY AND IMMITANCE AUDIOMETRY. ALL CHILDREN WITH SIGNS OF ILLNESS ARE THEN INDEPENDENTLY ASSESSED BY A PHYSICIAN WITH THE SAME HEALTH SCREENING INSTRUMENT. THUS, DIAGNOSIS IS THROUGH TWO INDEPENDENT EXPERTS. EACH WEEK A DIAGNOSIS IS MADE AND CHILDREN ARE CLASSIFIED AS WELL, SICK (USUALLY AN UPPER RESPIRATORY INFECTION WITHOUT OTITIS MEDIA), OR OTITIS MEDIA. BELOW IS THE INCIDENCE OF DISEASE OVER 17 MONTHS OF THE PROJECT. AS EXPECTED, OTITIS MEDIA IS MORE FREQUENT IN THE WINTER MONTHS AND OVERALL THE CHILDREN HAVE MANY BOUTS OF ILLNESS.

BOOK READING SESSIONS: IN ORDER TO BEGIN TO EXAMINE THE THIRD HYPOTHESIS CONCERNING THE RELATIONSHIP BETWEEN OTITIS MEDIA AND ATTENTION, CHILDREN WERE GIVEN A BOOK READING SESSION WHEN THEY WERE WELL, ILL, AND HAD OTITIS MEDIA. NOT ALL CHILDREN IN THE SAMPLE COULD BE OBSERVED DURING THESE THREE KINDS OF SESSIONS AT EACH AGE LEVEL SINCE MANY CHILDREN NEVER HAD AN EPISODE OF OTITIS MEDIA WHILE SOME CHILDREN MAY HAVE HAD ONLY A WELL OR ILL EPISODE BETWEEN 12 AND 18 MONTHS.

THE SESSIONS CONSISTED OF HAVING ONE EXPERIMENTER SIT IN THE DAY CARE CLASSROOM ON THE FLOOR WITH THE CHILD AND READ AN ATTRACTIVE BOOK TO THE CHILD. EITHER BEFORE OR AFTER THE BOOK READING EPISODE THE BOOK WAS MERELY SHOWN TO THE CHILD BUT NO WORDS WERE USED. THIS CONTROL CONDITION WAS USED TO DEMONSTRATE THAT THE CHILD WAS ATTENDING TO THE WORDS NOT JUST THE PICTURES IN THE BOOK. A SECOND EXPERIMENTER OBSERVED THESE SESSIONS AND CODED THE CHILDREN'S BEHAVIOR INTO A NUMBER OF MUTUALLY EXCLUSIVE CATEGORIES WHICH REFLECTED ATTENDING OR NOT ATTENDING TO THE BOOK. CODES WERE ENTERED EVERY 5 SECONDS, USING A HAND HELD COMPUTER. FOR THE PURPOSES OF THIS PRESENTATION TWO CATEGORIES WERE ANALYZED: THE PROPORTION OF FIVE SECOND INTERVALS IN WHICH THE CHILD ATTENDED TO THE BOOK (INTERRATER RELIABILITY WAS 93%) AND THE PROPORTION OF FIVE SECOND INTERVALS WHEN THE CHILD WAS NOT ATTENDING TO THE BOOK (INTERRATER RELIABILITY WAS 75%). AMBIGUOUS CATEGORIES OF ATTENTION WERE NOT ANALYZED. IN AN ANALYSIS OF THE PICTURE ONLY CONDITION VERSUS THE WORD AND PICTURE CONDITION, SIGNIFICANTLY MORE ATTENTION TO THE BOOK WAS OBSERVED DURING THE WORDS AND PICTURE CONDITION VERSUS THE PICTURE ONLY CONDITION ($p < .001$). THUS THIS DEMONSTRATION GIVES FURTHER FACE VALIDITY TO THIS TASK.

TEACHER AND PARENT RATINGS OF DISTRACTIBILITY: A GOODNESS OF FIT QUESTIONNAIRE (FEAGANS, 1986) WAS ADMINISTERED TO PARENTS AND DAYCARE TEACHERS. THIS QUESTIONNAIRE ASKED THE ADULTS TO RATE THE CHILDREN'S BEHAVIOR ON A FOUR-POINT LIKERT SCALE. ONE OF THE SUBSCALES FROM THIS QUESTIONNAIRE WAS "DISTRACTIBILITY." THUS RATINGS WERE OBTAINED ON ALL CHILDREN FOR THIS VARIABLE.

RESULTS

FOR THE PURPOSES OF THIS PAPER ONLY THOSE CHILDREN BETWEEN 12 AND 18 MONTHS WHO HAD A WELL AND OTITIS MEDIA SESSION FOR THE BOOK READING WERE USED IN THE ANALYSIS. THIS INCLUDED 16 CHILDREN. CHILDREN WHO WERE DIAGNOSED WITH OTITIS MEDIA GREATER THAN 20% OF THE TIME WERE PLACED IN THE HIGH OTITIS GROUP (MEAN PROPORTION OF OM = .26) AND THOSE WHO WERE DIAGNOSED WITH OTITIS MEDIA LESS THAN 20% OF THE TIME WERE PLACED IN THE LOW OTITIS GROUP (MEAN PROPORTION OF OM = .13).

1. HIGH OTITIS MEDIA CHILDREN ATTENDED LESS AND WERE OFF TASK MORE DURING THE WELL SESSIONS THAN THE LOW OTITIS MEDIA CHILDREN. THERE WERE NO DIFFERENCES BETWEEN THE TWO GROUPS DURING THE OTITIS MEDIA SESSIONS. (SEE GRAPHS BELOW.)

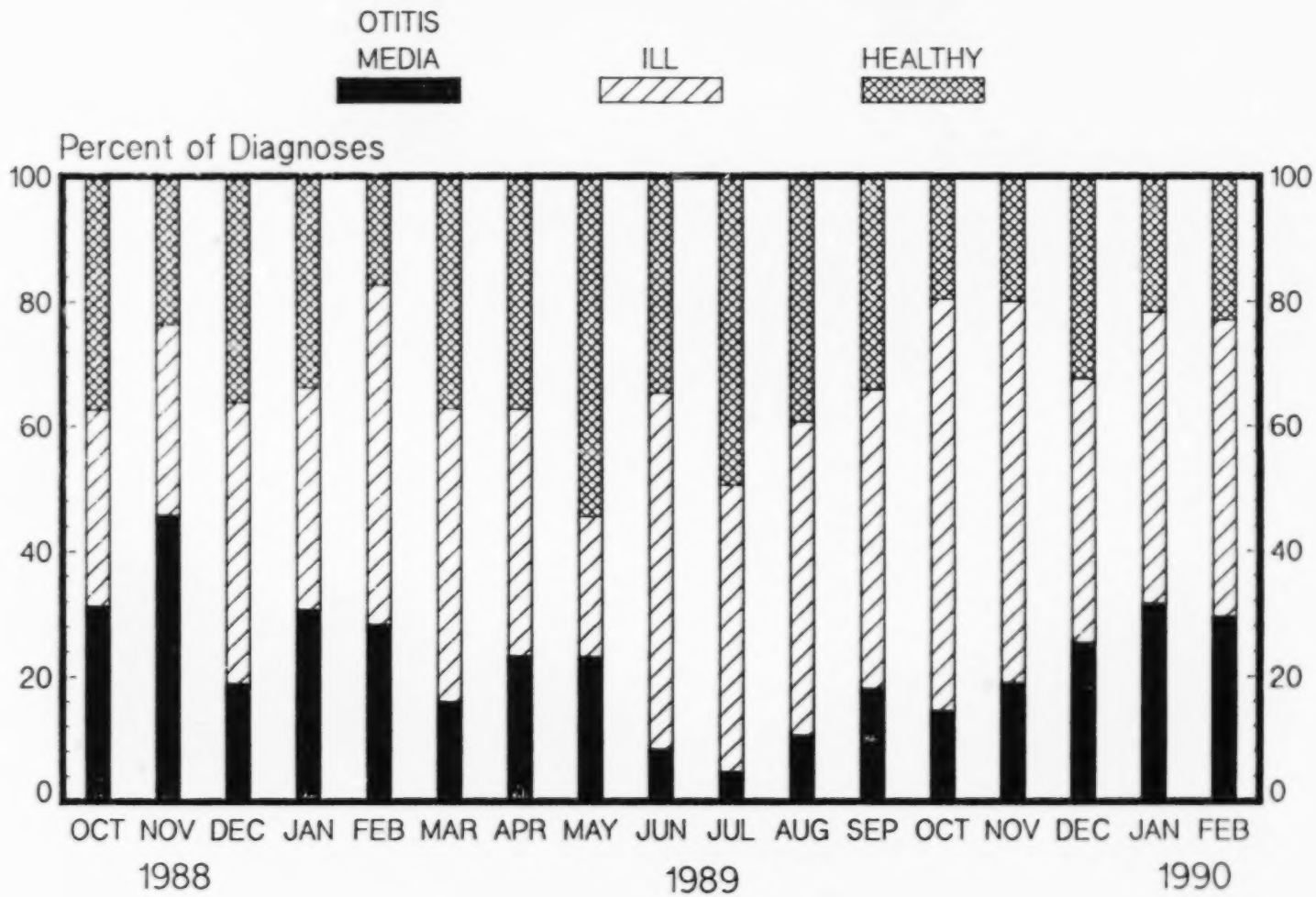
2. THE LOW OTITIS MEDIA GROUP HAD A SIGNIFICANT DROP IN THEIR ATTENDING BEHAVIOR AND A CONCOMITANT RISE IN THEIR OFF TASK BEHAVIOR BETWEEN THE WELL AND OTITIS MEDIA SESSIONS. THERE WAS NO SIMILAR CHANGE FOR THE HIGH OTITIS MEDIA GROUP. (SEE GRAPHS BELOW.)

3. CORRELATIONS REVEALED THAT THERE WAS NO RELATIONSHIP BETWEEN RATINGS OF DISTRACTIBILITY BY THE PARENTS AND THE PROPORTION OF OTITIS MEDIA EXPERIENCED BY THE CHILDREN (R = .17) BUT THERE WAS A POSITIVE RELATIONSHIP BETWEEN RATINGS OF DISTRACTIBILITY BY THE DAY CARE TEACHERS AND THE PROPORTION OF OTITIS MEDIA (R = .47).

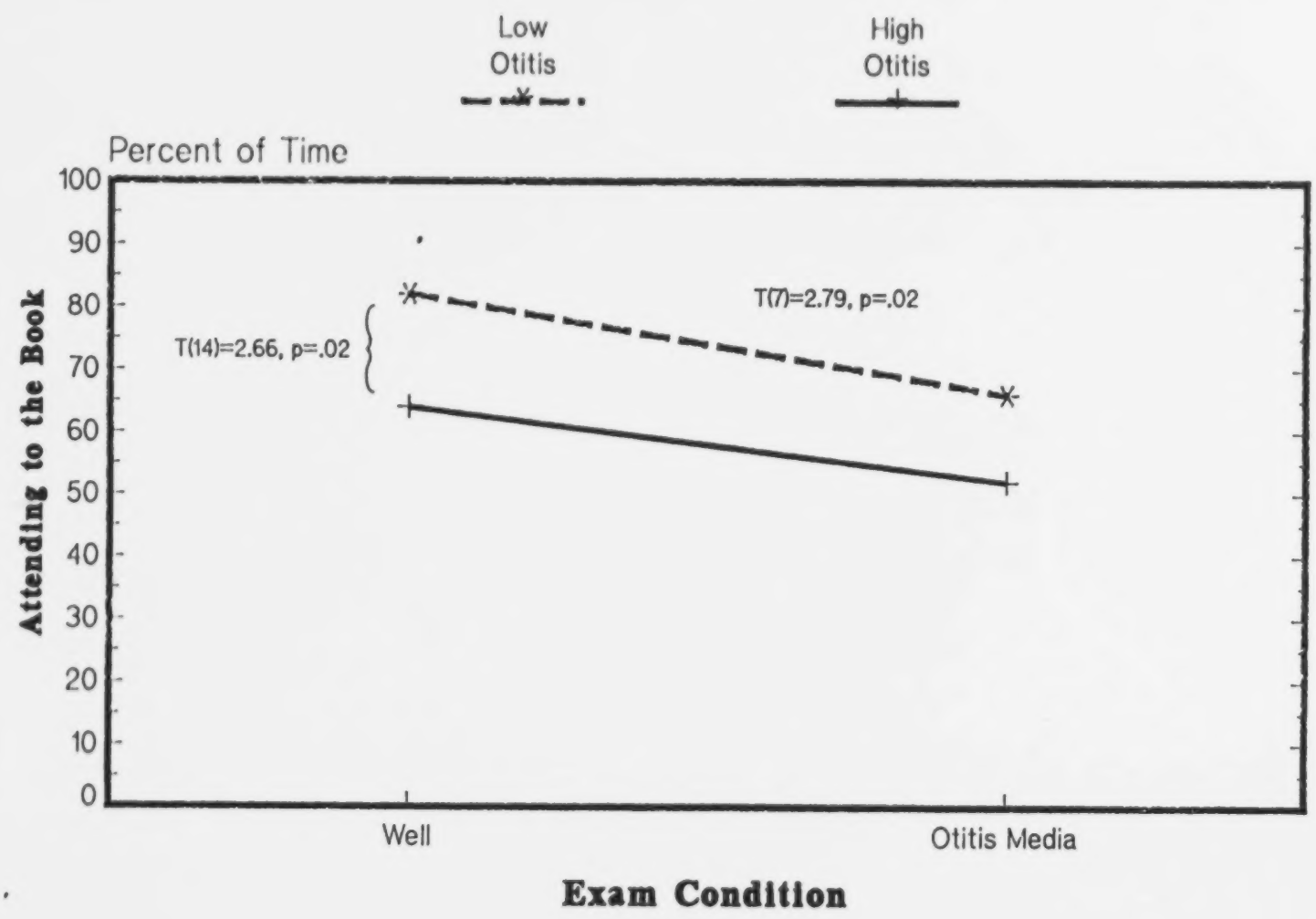
DISCUSSION

THESE FINDINGS SUPPORT THE THIRD HYPOTHESIS BY SHOWING THAT EVEN AS YOUNG AS 12 TO 18 MONTHS, CHILDREN WITH HIGH OTITIS MEDIA DO NOT ATTEND TO LANGUAGE AS MUCH AS CHILDREN WITH LOWER LEVELS OF OTITIS MEDIA. FURTHER THERE IS INDICATION THAT THESE HIGH OTITIS MEDIA CHILDREN ATTEND LESS WHEN THEY ARE WELL, GIVING EVIDENCE THAT THE DISEASE HAS ALREADY AFFECTED THEIR BEHAVIOR WHEN THEY ARE WELL AND WHEN THEY HAVE OTITIS MEDIA. TEACHER RATINGS SUPPORT THIS HYPOTHESIS BY INDICATING THAT THE PROPORTION OF OTITIS MEDIA IS RELATED TO RATINGS OF CHILD DISTRACTIBILITY. WHETHER OR NOT THIS FINDING WILL RELATE TO LATER NARRATIVE AND DISCOURSE SKILL DEVELOPMENT IS YET TO BE DEMONSTRATED BUT THIS FINDING IS CONSISTENT WITH THE PREVIOUS STUDY (FEAGANS, 1986) BY DEMONSTRATING THE ATTENTION DEFICIT AT A MUCH YOUNGER AGE THAN HAS BEEN SHOWN BEFORE.

Incidence of Otitis Media



Book-Reading Sessions



Book-Reading Sessions